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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/027,046

12/20/2001

Alexander M. Shukh

S01.12-0851/STL9652

2220

27365

7590

02/08/2006

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EXAMINER

DAVIS, DAVID DONALD

ART UNIT

PAPER NUMBER

2652

DATE MAILED: 02/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/027,046	Applicant(s) SHUKH ET AL.	
	Examiner David D. Davis	Art Unit 2652	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) 1-18 and 20-25 is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2001 and 21 May 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. ____.  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____.   | 6) <input type="checkbox"/> Other: ____.                                    |

### **DETAILED ACTION**

1. In response to the pre-appeal conference decision November 1, 2005 and a conversation with A. L. Wellington, the following final rejection can be found infra.

#### ***Oath/Declaration***

2. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

Non-initialed and/or non-dated alterations have been made to the oath or declaration. See 37 CFR 1.52(c).

#### ***Election/Restrictions***

3. Claim 19 is withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on February 14, 2005.

4. Applicant's election with traverse of claims 1-18, 20-22 and 24-25 in the reply filed on February 14, 2005 is acknowledged. The traversal is on the ground(s) that examination is not a serious burden. This is not found persuasive because the claims are patentably distinct.

The requirement is still deemed proper and is therefore made FINAL.

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5. This application contains claims drawn to an invention nonelected with traverse in a communication received February 14, 2005. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

### *Specification*

6. The disclosure is objected to because of the following informalities:
- a. On page 5, line 26, “which” should be --that-- so as not to be grammatically confusing.
  - b. On page 15, line 15, “An” should be --A-- so as not to be grammatically confusing.

Appropriate correction is required.

### *Drawings*

7. The drawings are objected to because the symbols used to indicate various materials (e.g. for the coil, the write gap etc.) are not used. See 37 CFR 1.84(n) and MPEP 608.02, section IX. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the

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drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

8. Claims 5 and 8 are objected to because of the following informalities:

- a. In line 1, claim 5, "1" should be --3--.
- b. In line 2, claim 8, "a" should be --the--.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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10. Claims 1, 3, 5, 7-10, 12, 14-17 and 20-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Shukh et al (US 6,954,340).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

As per claims 1, 10, 14 and 20-25, figure 14 of Shukh et al shows a head 50 for use with a magnetic medium 20 moving in a first direction, designated by "Media Motion". Figure 14 also shows a perpendicular writing element including a main pole 51 having a main pole tip. Figure 14 also shows a return pole 52 connected to the main pole 51 at a back gap. A return pole tip is positioned from the main pole 51 in the first direction. Write gap 53 is between the main pole 51 and the return pole 52.

Figure 14 additionally shows conductive coil 54 adjacent main pole 51 and return pole 52. An area of a magnetic medium facing surface of the main pole tip is less than an area of a magnetic medium facing surface of the return pole tip.

Further shown in figure 14 is reading element positioned in a second direction that is opposite the first direction from the perpendicular writing element. The reading element includes a top shield 42 and a bottom shield 56 in the second direction from shield 42. Read sensor 57 is positioned between the top shield 42 and the bottom shield 56.

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As per claims 3 and 15, figure 14 shows nonmagnetic layer 44 separating the top shield 42 from the writing main pole 51. As per claims 5 and 17, figure 14 shows the non-magnetic layer 44 being formed from conductive layer 54 sandwiched between insulating layers.

As per claim 7, Shukh et al discloses in column 6, lines 43-52 that a thickness of the non-magnetic layer is approximately 1 micrometer or greater. As per claims 8, 12 and 16, Shukh et al discloses in column 6, lines 43-52 that a gap layer defines a write gap of approximately 1 micrometer or less. As per claim 9, Shukh et al shows in figure 1 disc drive system 100 including the read/head described supra.

11. Claims 1, 3, 5-7, 9, 10, 14, 15, 17-18 and 20-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Seagle et al (US 6,754,049). As per claims 1, 10, 14 and 20-25, figures 1 and 3 of Seagle et al shows a head 22 for use with a magnetic medium 25 moving in a first direction 31. Figures 1 and 3 also shows a perpendicular writing element including a main pole 58 having a main pole tip 60. Figure 3 additionally shows a return pole 64 connected to the main pole 58 at a back gap. A return pole tip 68 is positioned from the main pole 58 in the first direction 31. A write gap is between the main pole 58 and the return pole 64.

Figures 1 and 3 further shows conductive coil 75 adjacent main pole 58 and return pole 64. An area of a magnetic medium facing surface of the main pole tip 60 is less than an area of a magnetic medium facing surface of the return pole tip 68.

Also further shown in figures 1 and 3 is reading element positioned in a second direction that is opposite the first direction from the perpendicular writing element. The reading element

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includes a top shield 46 and a bottom shield 30 in the second direction from shield 46. Read sensor 44 is positioned between the top shield 46 and the bottom shield 30.

As per claims 3 and 15, figures 1 and 3 shows nonmagnetic layer 40 separating the top shield 46 from the writing main pole 58. As per claims 5 and 17, figures 1 and 3 shows the non-magnetic layer 40 being formed from conductive layer 66 sandwiched between insulating layers. As per claims 6 and 18, Seagel et al discloses in column 8, lines 4-7 that conductive layer 66 is copper and in the paragraph bridging columns 6 and 7 Seagel et al discloses that insulating layer 40 is aluminum oxide.

As per claim 7, Seagle et al shows in figures 1 and 3 that a thickness of the non-magnetic layer 40 is approximately 1 micrometer or greater. As per claim 9, Seagle et al shows in figures 1 and 3 disc drive system 20 including the read/head described supra.

12. Claims 10, 13-14, 20-21 and 24 are rejected under 35 U.S.C. 102(a) as being anticipated by Tateyama et al (JP 2001-101612). As per claims 10, 14, 20-21 and 24, Tateyama et al shows in figure 1b and describes in section [0028] a head for use with a magnetic medium 200 moving in a first direction A. The head includes a perpendicular writing element with a main pole 13 having a main pole tip 12. Tateyama et al shows in figure 1b a return pole 14 connected to the main pole 13 at a back gap and has a return pole tip positioned from the main pole 13 in the first direction A. A write gap is between the main and return poles 13 & 14 and a conductive coil 17 is adjacent the main and return poles 13 & 14. Figure 1b also shows an area of a magnetic medium facing surface of main pole tip 12 is less than an area of a magnetic medium facing



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surface of the return pole tip. As per claim 13, Tateyama et al discloses in the abstract a disc drive system including a head of Tateyama et al.

13. Claims 10, 12-14, 20-21 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki et al (JP 4-90101). As per claims 10, 14, 20-21 and 24, Suzuki et al shows in figure 7 head 1 for use with a magnetic medium 2 moving in a first direction indicated by the arrow. Head 1 includes a perpendicular writing element with a main pole 12 having a main pole tip. Suzuki et al shows in figure 7 a return pole 11 connected to the main pole 12 at a back gap and has a return pole tip positioned from the main pole 12 in the first direction indicated by the arrow. A write gap is between the main and return poles 12 & 11 and a conductive coil 13 is adjacent the main and return poles 12 & 11. Figure 7 also shows an area of a magnetic medium facing surface of main pole tip is less than an area of a magnetic medium facing surface of the return pole tip.

As per claim 12, Suzuki et al discloses in the abstract that the write gap is approximately 1 micrometer or less. As per claim 13, Suzuki et al shows in figure 7 a disc drive system including head 1 of Suzuki et al.

14. Claims 10, 13-14, 20-21 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Mallory (US 4,656,546). As per claims 10, 14, 20-21 and 24, Mallory shows in figure 1 head 17 for use with a magnetic medium 11 moving in a first direction indicated by the arrow. Head 17 includes a perpendicular writing element with a main pole 19 having a main pole tip 27. *Note: even though main pole 19 is labeled return yoke, it is in fact the main pole or write pole as*

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*indicated in the specification and flux arrows in figure 1.* Mallory shows in figure 1 a return pole 21 connected to the main pole 19 at a back gap and has a return pole tip positioned from the main pole 19 in the first direction indicated by the arrow. Write gap 30 is between the main and return poles 19 & 21 and a conductive coil 25a, 25b, 25c & 25d is adjacent the main and return poles 19 & 21. Figure 1 also shows an area of a magnetic medium facing surface of main pole tip 27 is less than an area of a magnetic medium facing surface of the return pole tip. As per claim 13, Mallory shows in figure 1 a disc drive system including head 17 of Mallory.

***Claim Rejections - 35 USC § 103***

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 1, 3, 15, 22, 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tateyama et al (JP 2001-101612) in view of Lin (US 3,975,772). As per claim 1, Tateyama et al shows in figure 1b and describes in section [0028] a head for use with a magnetic medium 200 moving in a first direction A. The head includes a perpendicular writing element with a main pole 13 having a main pole tip 12. Tateyama et al shows in figure 1b a return pole 14 connected to the main pole 13 at a back gap and has a return pole tip positioned from the main pole 13 in the first direction A. A write gap is between the main and return poles 13 & 14 and a conductive coil 17 is adjacent the main and return poles 13 & 14. Figure 1b also shows an area

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of a magnetic medium facing surface of main pole tip 12 less than an area of a magnetic medium facing surface of the return pole tip.

Tateyama et al is silent as to a reading element having top and bottom shields.

Regarding claims 1, 15, 22, 23 and 25, Lin shows in figure 2 a reading element including a top shield 18 and a bottom shield 16 in the second direction from the top shield 18. Figure 2 of Lin also shows a read sensor 10 positioned between the top and the bottom shields 18 and 16.

Regarding claims 3 and 15, figure 2 of Lin shows a non-magnetic layer 34 separating the top shield 18 from the writing main pole 13.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the head and magnetic medium of Tateyama et al with the reading element positioned between the substrate and the write head as taught by Lin. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to position a reading element between a substrate and a write head, which is well within the purview of a skilled artisan and absent an unobvious result, "to provide an enhanced head assembly using a magnetoresistive element." See column 2, lines 25-27 of Lin.

17. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tateyama et al (JP 2001-101612) in view of Lin (US 3,975,772) as applied to claim 1 above, and further in view of Wang et al (*Magnetic Information Storage Technology*). Tateyama et al as modified by Lin discloses the claimed invention with respect to claim 1.

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As per claim 2, Tateyama et al discloses the main pole 13 and return pole 14 being formed of a magnetically permeable material, as disclosed in [0027], for example. As per claim 4, Lin shows in figure 2 that the non-magnetic layer 34 separating the top shield 18 from the writing main pole 13 is the same material as the gap layer 32.

Tateyama et al as modified by Lin is silent, however, as to the magnetically permeable material selected from a group consisting of CoZr, CoZrNb, Ni<sub>45</sub>Fe<sub>55</sub>, FeN, FeAlN, cobalt-iron (CoFe), cobalt-nickel-iron (CoNiFe), nickel-iron (NiFe), and iron (Fe). Tateyama et al as modified by Lin is also silent as to a non-magnetic layer being formed of aluminum oxide (Al<sub>2</sub>O<sub>3</sub>).

Regarding claim 2, Wang et al discloses on page 118 in Table 5.3 magnetic poles formed of a magnetically permeable material selected from a group consisting of CoZr, Ni<sub>45</sub>Fe<sub>55</sub>, FeAlN, CoFe, CoNiFe, and NiFe. Regarding claim 4, Wang et al discloses on page 35 in section 2.2 a non-magnetic layer made of Al<sub>2</sub>O<sub>3</sub>, which is the gap layer.

It would have obvious to a person having ordinary skill in the art at the time the invention was made to form the magnetic poles of Tateyama et al as modified by Lin from a magnetically permeable material selected from a group consisting of CoZr, Ni<sub>45</sub>Fe<sub>55</sub>, FeAlN, CoFe, CoNiFe, and NiFe as disclosed by Wang et al. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to form magnetic poles formed of a magnetically permeable material selected from a group consisting of CoZr, Ni<sub>45</sub>Fe<sub>55</sub>, FeAlN, CoFe, CoNiFe, and NiFe because the materials are good for sputtering, and “sputtering is more

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flexible with target material choices and easier to handle amorphous or laminated.” See the paragraph bridging pages 117 and 119 of Wang et al.

It also would have obvious to a person having ordinary skill in the art at the time the invention was made to form the non-magnetic layer of Tateyama et al as modified by Lin from  $\text{Al}_2\text{O}_3$  as disclosed by Wang et al. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to form a non-magnetic layer from  $\text{Al}_2\text{O}_3$  because the materials are good for sputtering, and “sputtering is more flexible with target material choices and easier to handle amorphous or laminated.” See the paragraph bridging pages 117 and 119 of Wang et al.

18. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al (JP 4-90101) in view of Wang et al (*Magnetic Information Storage Technology*). Suzuki et al discloses the claimed invention with respect to claim 10. See description supra.

Suzuki et al is silent, however, as to the magnetically permeable material selected from a group consisting of CoZr, CoZrNb,  $\text{Ni}_{45}\text{Fe}_{55}$ , FeN, FeAlN, coblt-iron (CoFe), cobalt-nickel-iron (CoNiFe), nickel-iron (NiFe), and iron (Fe).

Wang et al discloses on page 118 in Table 5.3 magnetic poles formed of a magnetically permeable material selected from a group consisting of CoZr,  $\text{Ni}_{45}\text{Fe}_{55}$ , FeAlN, CoFe, CoNiFe, and NiFe.

It would have obvious to a person having ordinary skill in the art at the time the invention was made to form the magnetic poles of Suzuki et al from a magnetically permeable material

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selected from a group consisting of CoZr, Ni<sub>45</sub>Fe<sub>55</sub>, FeAlN, CoFe, CoNiFe, and NiFe as disclosed by Wang et al. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to form magnetic poles formed of a magnetically permeable material selected from a group consisting of CoZr, Ni<sub>45</sub>Fe<sub>55</sub>, FeAlN, CoFe, CoNiFe, and NiFe because the materials are good for sputtering, and “sputtering is more flexible with target material choices and easier to handle amorphous or laminated.” See the paragraph bridging pages 117 and 119 of Wang et al.

19. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mallory (US 4,656,546) in view of Wang et al (*Magnetic Information Storage Technology*). Mallory discloses the claimed invention with respect to claim 10, supra.

Mallory is silent, however, as to the magnetically permeable material selected from a group consisting of CoZr, CoZrNb, Ni<sub>45</sub>Fe<sub>55</sub>, FeN, FeAlN, coblt-iron (CoFe), cobalt-nickel-iron (CoNiFe), nickel-iron (NiFe), and iron (Fe).

Wang et al discloses on page 118 in Table 5.3 magnetic poles formed of a magnetically permeable material selected from a group consisting of CoZr, Ni<sub>45</sub>Fe<sub>55</sub>, FeAlN, CoFe, CoNiFe, and NiFe.

It would have obvious to a person having ordinary skill in the art at the time the invention was made to form the magnetic poles of Mallory from a magnetically permeable material selected from a group consisting of CoZr, Ni<sub>45</sub>Fe<sub>55</sub>, FeAlN, CoFe, CoNiFe, and NiFe as disclosed by Wang et al. The rationale is as follows: one of ordinary skill in the art at the time

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the invention was made would have been motivated to form magnetic poles formed of a magnetically permeable material selected from a group consisting of CoZr, Ni<sub>45</sub>Fe<sub>55</sub>, FeAlN, CoFe, CoNiFe, and NiFe because the materials are good for sputtering, and “sputtering is more flexible with target material choices and easier to handle amorphous or laminated.” See the paragraph bridging pages 117 and 119 of Wang et al.

20. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tateyama et al (JP 2001-101612) in view of Wang et al (*Magnetic Information Storage Technology*). Tateyama et al discloses the claimed invention with respect to claim 10, supra.

Tateyama et al is silent, however, as to the magnetically permeable material selected from a group consisting of CoZr, CoZrNb, Ni<sub>45</sub>Fe<sub>55</sub>, FeN, FeAlN, cobalt-iron (CoFe), cobalt-nickel-iron (CoNiFe), nickel-iron (NiFe), and iron (Fe).

Wang et al discloses on page 118 in Table 5.3 magnetic poles formed of a magnetically permeable material selected from a group consisting of CoZr, Ni<sub>45</sub>Fe<sub>55</sub>, FeAlN, CoFe, CoNiFe, and NiFe.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to form the magnetic poles of Tateyama et al from a magnetically permeable material selected from a group consisting of CoZr, Ni<sub>45</sub>Fe<sub>55</sub>, FeAlN, CoFe, CoNiFe, and NiFe as disclosed by Wang et al. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to form magnetic poles formed of a magnetically permeable material selected from a group consisting of CoZr, Ni<sub>45</sub>Fe<sub>55</sub>, FeAlN,

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CoFe, CoNiFe, and NiFe because the materials are good for sputtering, and “sputtering is more flexible with target material choices and easier to handle amorphous or laminated.” See the paragraph bridging pages 117 and 119 of Wang et al.

21. Claims 1, 3, 7, 8, 15, 16, 22, 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al (JP 4-90101) in view of Lin (US 3,975,772). As per claim 1, Suzuki et al shows in figure 7 head 1 for use with a magnetic medium 2 moving in a first direction indicated by the arrow. Head 1 includes a perpendicular writing element with a main pole 12 having a main pole tip. Suzuki et al shows in figure 7 a return pole 11 connected to the main pole 12 at a back gap and has a return pole tip positioned from the main pole 12 in the first direction indicated by the arrow. A write gap is between the main and return poles 12 & 11 and a conductive coil 13 is adjacent the main and return poles 12 & 11. Figure 7 also shows an area of a magnetic medium facing surface of main pole tip is less than an area of a magnetic medium facing surface of the return pole tip. As per claims 7, 8 and 16, Suzuki et al discloses in the abstract that the write gap is approximately 1 micrometer or less.

Suzuki et al is silent as to a reading element having top and bottom shields.

Regarding claims 1, 15, 22, 23 and 25, Lin shows in figure 2 a reading element including a top shield 18 and a bottom shield 16 in the second direction from the top shield 18. Figure 2 of Lin also shows a read sensor 10 positioned between the top and the bottom shields 18 and 16.

Regarding claims 3 and 15, figure 2 of Lin shows a non-magnetic layer 34 separating the top shield 18 from the writing main pole 13.



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It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the head and magnetic medium of Suzuki et al with the reading element positioned between the substrate and the write head as taught by Lin. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to position a reading element between a substrate and a write head, which is well within the purview of a skilled artisan and absent an unobvious result, "to provide an enhanced head assembly using a magnetoresistive element." See column 2, lines 25-27 of Lin.

### ***Response to Arguments***

22. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David D. Davis whose telephone number is 571-272-7572. The examiner can normally be reached on Monday thru Friday between 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, A. L. Wellington can be reached on 571-272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
David D. Davis  
Primary Examiner  
Art Unit 2652

ddd